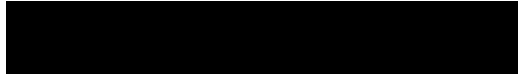# EXHIBIT D

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December 2, 2022
REALTIME

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1
2   VIDEOGRAPHER: Today dated is December
3   2nd, 2022. The time is approximately 11:05 a.m. we're
4   on the record.
5   THE REPORTER: My name is Kelly Bryant and
6   I'm a Texas-certified shorthand reporter, CSR number
7   5772. The witness is appearing remotely from
8   Greenville, texas.
9   All attorneys present acknowledge and
10   understand that I am not physically present with the
11   witness and that, in lieu of an oath administered in
12   person, I will be administering the oath remotely.
13
14   Will all attorneys please indicate your
15   agreement by stating your name and agreement on the
16   record, after which I will swear in the witness.
17   MR. CHIPLUNKAR: My name is Raj
18   Chiplunkar. I'm with the law firm of McAndrews, Held &
19   Malloy. I represent TQ Delta,.
20   On the line with me is lead counsel Peter
21   McAndrews and .
22   MR. ONG: Andrew Ong with Goodwin Proctor
23   on behalf of CommScope.
24   With me from Goodwin is Sarah Casey. We
25   little have additional counsel with CommScope.

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1   THE REPORTER: We have who?
2   MR. ONG: Additional counsel for CommScope
3   on the line.
4   MR. LOGAN: William Logan on behalf of
5   CommScope defendant.
6   Mike Mike: Make Vic on behalf CommScope
7   as well.
8   WITNESS,
9   having been first duly sworn, testified as follows:
10   DIRECT EXAMINATION
11   BY ATTY:
12   Q. Good morning, sir. As you heard my name is
13   Raj Chiplunkar and I represent TQ Delta.
14   Can you please state your full name, sir?
15   A. Mark Reid Lanning.
16   Q. And please state your residential address?
17   A. 4 Eagle Nest, Greenville, Texas 75402.
18   Q. And where are present located?
19   A. At the same address I just gave you.
20   Q. Is there anyone else in the room with you?
21   A. No.
22   Q. Do you have written or typewritten notes with
23   you?
24   A. No.
25   Q. Do you have any other printed materials with

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1   you?
2   A. Yes.
3   Q. And can you elaborate what printed materials
4   you have?
5   A. I have my opening expert report. I have the
6   CV that for for the attachments to my report. I have
7   the 354 patent. I have 027 patent. That's typically
8   referred though as Kapoor and I have part of the Chou
9   dissertation.
10   Q. Can you tell me what portion of Chou you have?
11   A. I presented out from start title the end of
12   the introduction mainly so that I would have table
13   contents in front of me. It's about 20 pages give or
14   take.
15   Q. Okay. Any other printed materials with you?
16   A. No.
17   Q. Are all those clean copies documents that you
18   have with you or do they have notes already on them?
19   A. These only one page with some notes in my
20   report. It's on page 6. It's on the table and I just
21   have notes for the table for which prior art would be
22   relevant for this deposition.
23   In other words I just have notes that the
24   first three columns or first three rows in the table
25   were Nokia relevant prior art and so I just said just

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1   24 db left for the subchannel to use to transferred
2   database.
3   Q.   So if you could look at court's construction
4   if you have that in front of you the court's
5   construction?
6   A.   Yes.
7   Q.   Okay. Thank you. So the 6 db is a parameter
8   use in determine number of bits allocate each of the
9   plurality carriers where the value of the parameters
10   specifies extra SNR requirement assigned carrier in
11   addition to SNR required to maintain a specific data
12   rate, correct?
13   A.   That's right. Yes. I agree with you read
14   that correctly.
15   Q.   Fair enough. I understand you establish a
16   baseline when you're talking about reference we're on
17   the same page here, you know -- you know okay.
18   So let's say one of your carriers now
19   experiences some noise and the SNR on the first channel,
20   equates to 24 db?
21   A.   Okay. We're still -- we're not talking
22   anything about in the SNR margin. You're still talking
23   about the SNR that the court's defined as being required
24   to maintain a specified bit error rate, right.
25   Q.   Well, that's court's construction SNR margin.

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1   I'm saying the SNR of the carrier degraded from 30 db to
2   24 db, it because noisy, the channel?
3   A.   Okay. We're still hypothetical I'm processing
4   what you're processing.
5   Q.   That's fine.
6   A.   One of the channel 30 db originally as degrade
7   to 24 db; is that right?
8   Q.   That's right.
9   A.   Okay.
10   Q.   So so so you agree with me now that there is
11   no SNR margin available operating SNR margin on this
12   channel correct?
13   MR. ONG: Objection, form.
14   Q.   THE ATTORNEY: You were at 3 db. You applied
15   6 db SNR margin, which brought down to 24 db and you you
16   were providing 8 bits on that carrier with a 6 db of SNR
17   margin and now your SNR degraded from 30 to 24 so,
18   essentially, you lost all your margin, correct?
19   A.   Well, I haven't lost the margin. That's the
20   main reason why I put the 6 db margin there.
21   Q.   Right.
22   A.   The intent is if the subchannel degrades by 6
23   db, the channel can still operate at its original speed.
24   Q.   Fair enough.
25   A.   To me, I guess to finish as -- to me the data

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1   rate on the subchannel hadn't degraded even if the
2   signal to noise ratio has been reduced from 30 to 24.
3   Q.   Okay. Fair enough. But the edge here, you
4   might start getting bit error, correct?
5   A.   If the signal to noise ratio on the subchannel
6   decreases any further to reduce it below 24 then you
7   would start effecting it would start affecting the date
8   rate or the performance of that subchannel.
9   Q.   Correct. So one one of the ways the prior art
10   one of the ways to fix is this to perhaps move bit from
11   the carrier that degrade SNR to a carrier that still has
12   all its SNR correct?
13   MR. ONG: Objection, form.
14   A.   Well, your question is not clear. To me I
15   don't think it's clear for the record.
16   So let's make sure the hypothetical we've
17   set up now you're saying one of the channels decrease
18   you started at first step one of the subchannel
19   decreased from 30 db to 24 db that was the first step
20   correct.
21   Q.   Correct.
22   A.   Now are you asking me the next step that same
23   channel decreases from 24 db to a lower than 24 db SNR?
24   Q.   No. Let's just keep it at 24. Let's keep it
25   at 24.

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1   A.   Okay.
2   Q.   What I was saying you're -- in the system
3   you're at the cusp if you get any more degradation of
4   the SNR, you would start getting bit error rates,
5   correct?
6   A.   If you keep trying use same parameter.
7   Q.   Yes.
8   A.   Same modulation method.
9   Q.   Yes.
10   A.   Then bit error would probably not stay ten to
11   minus seven.
12   Q.   Fair enough. One way to fix is this as to
13   move a bit -- you are transmitting you had 8 bits on
14   channel 1, you start you move one of the bits to one of
15   the other channels and then operate with 7 bits on
16   channel 1.
17   So you have -- you added you got back some
18   margin, correct?
19   MR. ONG: Objection, form.
20   A.   Okay. Can you going back to the hypothetical.
21   I need to stay straight and that will help maybe keep
22   the record straight.
23   So I first started with four channels at
24   30, db correct.
25   Q.   Right.

15 (Pages 57 to 60)

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1   A. Then you said because I want to add a 6 db
2   margin, not to be not to be confused with SNR margin,
3   but margin to ensure that I get and can maintain the bit
4   error rate, I want to do 6 db. So, essentially, that
5   leaves 24 db for all four of those channels?
6   Q. Right.
7   A. Am I correct with your?
8   Q. Yes.
9   A. Okay.
10   Q. But 6 db is the close SNR margin because it is
11   use in arriving at the bit error -- used in arriving at
12   the bit on each carrier?
13   A. You keep using that word and every time you
14   use the word that's been construed by court, I go to
15   construction.
16   So we must use a different term or I can't
17   answer your question. I believe you're asking me is it
18   the margin established for the specified bit error or
19   what I referred as bit error rate margin.
20   Just to make sure I contrast or
21   distinguish it from the SNR margin which is added in
22   addition to that.
23   Q. So in my hypothetical with four carriers where
24   the SNR each carrier is 30, db measured what is the 6 db
25   in your mind that you are providing?

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1   A. The bit error rate margin and that's what the
2   court see the court has said in addition to the SNR
3   required to maintain specify bit error for the link.
4   So that's why I'm calling it the bit error
5   margin.
6   Q. So you're calling you're calling the 6 db bit
7   error rate margin?
8   A. Yes.
9   Q. Which is SNR margin of the claim?
10   MR. ONG: Objection, form?
11   A. No. The SNR margin has to be separate and a
12   part -- it's clear by the court's order it is not the
13   bit error margin it's an additional margin after the bit
14   error margin is established.
15   We can read it again this.
16   Q. Okay.
17   A. That's my understanding.
18   Q. Let's assume there's no be margin let's say
19   you have 30 db, how do I go about applying SNR margin to
20   this carrier?
21   A. Okay. Now, you've lost me.
22   Are we changing your hypothetical to a
23   different hypothetical or we staying with this
24   hypothetical.
25   Q. We are staying with the hypothetical.

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1   You got four carriers each carrier 3 db of
2   SNR?
3   A. Right. As 30 db measured signal to noise
4   ratio.
5   Q. I want -- I want to understand in your mind
6   where is SNR margin comes, how does the SNR margin come
7   in?
8   A. Fair enough.
9   And the court told us there's two
10   different margins there's two different SNRs the SNR.
11   So step one when I the establish one as to
12   measure the measured signal to noise ratio then I
13   actually apply a margin, so that I can ensure that each
14   subchannel maintains a target bit error rate, and you've
15   used the bit error rate of ten to minus seven or one bit
16   in every ten million. Okay.
17   So the first step is when a margin when
18   you measure 30 for each one and in your question in your
19   hypothetical you've said let's assume we need a 6 db bit
20   error margin in other words we need to apply a 6 db
21   margin to establish the bit error rate.
22   So now if we apply 6 db to each those four
23   subchannels I take 6 away from 30 so now I only have 24
24   db available on each those four channels and you asked
25   me earlier what happens if the channels SNR goes down to

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1   24 I say nothing because I've already assumed that may
2   happen and I and the channel still running because I
3   took that 6 db to make sure the channels could pluck
4   waiting due be rate impulse noise or any other factor.
5   Now, if you want to take more or add
6   another margin, that's where the SNR margin comes in so
7   if you want to take this 24 that we're running that's
8   establishing bit error margin now if you want to do an
9   SNR margin the patent describes that's now taken away
10   from what we already have right.
11   Q. So in your in your view the court's
12   construction of the SNR margin is in addition to the
13   system SNR margin additional margin?
14   A. It says it very clearly to me it's requirement
15   assigned per carrier in addition to the NRA required to
16   maintain a specified bit error rate BER for the
17   communication link so step one that SNR required to
18   maintain bit error rate that we talked about in your
19   hypothetical you used 6 db.
20   I've taken that 6 db away. The SNR margin
21   is a requirement assigned in addition to that bit error
22   rate margin.
23   Q. So -- so you have in your opinion there are
24   there's a bit error rate margin and there's additional
25   NRA margin over bit error margin?

16 (Pages 61 to 64)

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1   Q. So in the example where you a carrier where
2 you had 30 db, you had 30 db SNR, correct, you had 30 db
3 SNR and come 3 bit. You could put ten bits on that
4 carrier, correct, and establish and get your bit error
5 rate, correct?
6   A. You lost me. Are we I don't know are we
7 you're going to have give me context so I can keep up
8 with.
9   Q. Okay.
10   A. We did big gear change and it sounds like even
11 a different hypothetical.
12   For me to understand for the record to be
13 clear first off you're giving me a hypothetical.
14   So let's just do it by the numbers kind of
15 work through it so it's clear what you're asking me and
16 then I'll try to.
17   Q. Okay.
18   A. Give my best answer.
19   Q. In hypothetical we had four carriers?
20   A. Right.
21   Q. Each carrier had 30 db of SNR?
22   A. Okay.
23   Q. 30 db SNR?
24   A. 30.
25   Q. 30?

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1   A. Each one of the four subcarrier 30.
2   Q. You're going with the term 3 db per bit?
3   A. By the way I disagree with your rule of thumb.
4 Because the patent. The patent disagrees with your rule
5 of thumb because the patent says so I just want to put
6 this on the record.
7   That's why I didn't want to agree with you
8 because I'm looking at column 2 of the 354 patent and
9 line 27 it says for example if the system operating at 6
10 db margin EG four bits allocated to carriers with 27. 5
11 db.
12   So that four SNR db one times ten to the
13 minus seven which clearly says to me that rule of thumb
14 doesn't apply as far as patents are concerned.
15   Q. Okay. We can pick another number but?
16   A. Well, I was I want to make sure I'm on the
17 record to say your hypothetical I just accepted even
18 though I didn't agree with it earlier on even the patent
19 doesn't agree with the hypothetical but I'm happy to use
20 the hypothetical.
21   Q. Okay. So so you can coming back to the
22 hypothetical four carriers each 30 db of SNR?
23   A. Okay.
24   Q. 3 db rule of thumb 3 db per bit you can put
25 ten on each carrier, correct?

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1   A. Without applying any margin for BER doing
2 arithmetic divide by 3 you get ten.
3   Q. Right?
4   A. But that's not what taught by patent any other
5 reference.
6   Q. What is bit error rate of that system?
7   A. Of your hypothetical you just gave me is zero.
8   Q. Yes.
9   A. The bit error rate margin for the system you
10 gave me of the measured db each of the four subchannels
11 is 30 and you just used that whole 30 you have not
12 applied a BER SNR margin.
13   Q. Right. I've not applied BER SNR margin but
14 now if I add on the court's construction of SNR margin I
15 can add 6 db that would be SNR margin construed by court
16 correct?
17   A. No because it says it's an extra one in
18 addition to the SNR required to maintain specify bit
19 error rate.
20   Q. Yes.
21   A. The bit error rate there margin.
22   Q. There is no do you see term bit error rate
23 margins in the claims?
24   A. I don't care what claims say when I'm reading
25 court's construction.

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1   Q. Do you see term bit error rate margin in the
2 court's construction?
3   A. In the court's construction.
4   Q. Yes where does the term?
5   A. I see word left right make rain for the
6 communication link.
7   Q. What I'm asking do you see the term bit error
8 rate margin you have used term several time bit error
9 rate margin is that in the court's construction?
10   A. I see the court first, I'm going to keep
11 repeating this the court's construction is the court's
12 construction I'm in the trying to modify it. I'm just
13 reading it and applying it.
14   And it says, It's that the SNR margin is
15 an extra SNR requirement assigned per carrier in
16 addition to the SNR required to maintain a specific bit
17 error rate for the communication link specified bit
18 allocation.
19   Q. If you go to patent column 1 line 57?
20   A. I'm another column 1 line which line number
21 did you ask me to.
22   Q. 57?
23   A. 57. Okay.
24   Q. So it says script margin transceiver modulate
25 number of bits subchannel number of bits depending on

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1   the SNR of that subchannel and the bit error rate
2   requirement of the link.
3   Do you see that?
4   A. Yes.
5   Q. Example of the bit error rate one to power ten
6   to minus seven one bit intend receive average and the
7   SNR particular channel 21. 5BE then that channel is
8   moderate four bits.
9   Do you see that?
10   A. Yes.
11   Q. Since 21 required for QAM because because you
12   need 21. 5 db to transmit four QAM.
13   Do you see this?
14   A. Yes.
15   Q. Then if you go to column 2 starting at line 6
16   it says in many D system additional parameter is used to
17   determine the number of bits allocated to each
18   subchannel.
19   Do you see that?
20   A. Yes.
21   Q. And its talking about when it says D MT system
22   it's talking about the DSL systems that it has included
23   in paragraph 1, correct?
24   A. Not specifically. It's saying D MT systems in
25   general. It's listed the systems or standards and

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1   column 1 so it's not specifically addressing the exhibit
2   5 we talked but Exhibit 5 I will agree is listed in
3   multiple systems listed in column 1.
4   Q. And but when it says in many D MT systems it
5   would include the product the prior DSL systems listed
6   in column 1, correct?
7   A. That's what it says the patent says what it
8   says.
9   Q. Okay.
10   A. Any D MT it says what it says.
11   Q. Inaudible?
12   A. Inaudible.
13   Q. Within the definition of D MT system you would
14   agree E413 is D MT system?
15   A. I would agree it's a D MT system.
16   Q. And it guess on to say an additional parameter
17   is used to determine the number of bits allocated to
18   each subchannel.
19   Do you see that an additional parameter?
20   A. Yeah that says additional parameter yes.
21   Q. Okay. And this parameter is called the SNR
22   margin or simply the margin.
23   Did you see that?
24   A. Yep.
25   Q. The margin specify an extra SNR per subchannel

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1   in addition to what is required to specify to maintain
2   specified bit error rate requirement do you see that?
3   A. Which is very similar language what court
4   construed.
5   Q. I would agree that's correct.
6   It's referring margin used in the many DMT
7   the additional parameter in prior art DMT pieces,
8   correct?
9   MR. ONG: Objection, form.
10   A. It says what it says. I'm agreeing if we read
11   it the patent says what it says it speaks for itself but
12   I'm agreeing that I understand that it says what it
13   says.
14   Q. So you do not dispute that what's being
15   discussed in line 5 to ten of column 2 is the SNR
16   margins as used in T. 413 correct?
17   MR. ONG: Objection, form?
18   A. No it says as an example I'm reading now from
19   line 9 of column 2. As an example the DMT system with
20   the 6 db margin that's the db margin for the bit error
21   rate that we discussed earlier would require a 21. 5
22   plus 6 are a 27. 5 db SNR on the subchannel in order to
23   transmit four bits on that subchannel with a 1 to times
24   ten to the minus seven BER this is 60 db more than
25   required by the example in the previous paragraph

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1   because now a 6 db margin is added to the system.
2   Another way of looking at that in the
3   example of previous paragraph where four bits were
4   allocated to subchannel of 21. 5 db as margin was zero
5   db.
6   So this margin that they're referring to
7   the 6 db margin is the 6 for the bit error rate they're
8   saying it very clearly that it's an additional 6 db
9   added to an achieve one time ten to the minus seven BER
10   for the whole communication link.
11   Each subchannel db could be different says
12   that at the bottom of column one. This is the they're
13   discussing adding the 60 db that's where we started the
14   morning with your hypothetical example of taking 30 that
15   was the measured SNR and then we talk 6 db more for the
16   example in the previous paragraph, right.
17   And then that's where they say then there
18   was four bits allocated to subchannel with the 21. 5 db
19   SNR margin was zero in other words they're comparing it
20   and saying now you've decreased or you've increased the
21   requirements the example in the patent is done
22   differently than your hypothetical than you gave me but
23   they come because to the same point is taking 6 db off
24   of each subchannel so that you can achieve the BER.
25   MR. CHIPLUNKAR: Objection,

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1   nonresponsive.
2   Q. THE ATTORNEY: My question was column 2 lines
3   4 says in many DMT systems an additional parameter is
4   used to determine the number of bits allocated to each
5   subchannel did I read that correctly, sir?
6   A. Yes.
7   Q. And then it says this parameter the parameter
8   that is used in many DMT systems correct you with me so
9   far that this parameter according to parameter that is
10   many DMT systems?
11   MR. ONG: Objection, form.
12   A. So parameter called SNR margin this is.
13   Q. Yeah?
14   A. This is why court provided us construction you
15   can ask me this one 100 more times. I'm going to tell
16   you that when I see the words SNR margin I'm going to go
17   to the court's construction. I'm not going to answer
18   anything different than what the court has construed and
19   this is not describing what the court has construed in
20   the patent this is the probably one of the main reasons
21   this term needed to be construed because the patent is
22   confuse not guilty this area.
23   Q. So your position today is that your opinion
24   today is that SNR margin as used in patent is not the
25   same as the margin is not same SNR margin as used 234

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1   many DMT systems prevailing at that time?
2   A. It's my opinion column 2 starting in line 4
3   through line 17 that word SNR margins that are described
4   in that portion of the patent are not as the court has
5   construed SNR margin.
6   Q. Okay. And when the prior art that you used in
7   your analysis Kapoor for example when it uses word SNR
8   margins, you agree with me that it is using word SNR
9   margin as used in the art in the DMT system at that time
10   correct?
11   A. No, I don't agree with that I would have to go
12   each reference I've cited I've been very careful to cite
13   Kapoor and Chou because it's a combination of Kapoor an
14   Chou that I've used and I've been very careful to map
15   the claims that include the term SNR margin to the
16   court's construction of SNR margin.
17   Q. So it would surprise at this told court's
18   construction of the SNR margin does not appear anywhere
19   in your analysis of prior art?
20   A. That's not true I have it at least three times
21   that I've applied it.
22   Q. Okay?
23   A. Multiple times I strongly disagree with that.
24   Q. Okay.
25   A. This is lesson I learned let me finish this is

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1   lesson I learned many year ago that you applies expert
2   you apply the court's construction that's what I'm
3   trying to explain many times to you is I will not go
4   away or try to change the court's construction and I
5   have mapped the court's construction to each one of the
6   claims as I've analyzed them.
7   Q. Okay. If you go to Exhibit 3 of your report?
8   A. Okay.
9   Q. So so before we get into your opinions
10   regarding prior art so you agree that the prior art does
11   not disclose type of SNR margin this column 1 and 2 of
12   the patent, correct?
13   A. I haven't made that analysis. I agree and I
14   provided analysis that prior art that I've used meets
15   court's construction for SNR margin.
16   Q. So sitting here today you don't have an
17   opinion if the prior art disclose type of SNR margin
18   described in column 1 and 2 of our patent?
19   A. I didn't even consider that because the court
20   gave us a clear construction.
21   Why do you keep asking me this question
22   I'm going to keep answering it the same way. I've been
23   in Judge Gilstrap's court many times. It doesn't matter
24   what court it is.
25   But I am very clear and I'll continue to

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1   be very clear that I am following the court's
2   construction for SNR margin I'm not trying to compare it
3   I'm in the trying to contrast to any other definition
4   I've simply mapped what the court says it is and I've
5   gone with it in my analysis and I haven't varied in any
6   way.
7   Q. Okay. Can we go to section can we go to
8   paragraph 29?
9   A. 29, 29.
10   Q. Yes. Yes.
11   MR. ONG: Which Exhibit are we in.
12   MR. CHIPLUNKAR: Exhibit 3.
13   THE WITNESS: My report.
14   MR. ONG: Thank you.
15   THE WITNESS: I'm there.
16   Q. THE ATTORNEY: Can you read first sentence,
17   sir?
18   A. Paragraph 29 I understand that the first step
19   in determining whether patent claim invalid to properly
20   construe the claims first sentence or do you want keep
21   going.
22   Q. Period that's good enough that's first, second
23   what's second step?
24   A. I also understand that the claims must be
25   construed same way in determine invalidity or validity

27 (Pages 105 to 108)

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1   in noninfringement. I can continue reading.
2   Q. I'm waiting for the extending in the analysis
3   you said I understand first step I am what is your
4   second step in determining if the claim is invalid what
5   is the second step?
6   A. The second step would be whether the prior art
7   discloses that.
8   Q. Where is that can you keep reading can you
9   point me to the second step in analysis in your
10   description of law?
11   A. I didn't I didn't describe all the steps here
12   I wanted make sure the first step and I goes directly to
13   conversation we have been having as I wanted to make
14   sure the patent claim to properly construe the claims
15   and to properly construe the claims you have to use the
16   court's construction.
17   Q. And then you have to apply the court's
18   construction as second step to the prior art you agree
19   that's the second step?
20   A. Yes that's what I just told it's not in my
21   report but I've done this many times. I understand
22   that's the second step.
23   Q. Okay. Let's go to lets go to paragraph let's
24   go to paragraph 317 of your report?
25   A. Say the number again.

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1   Q. 317, sir?
2   A. 317 okay. I'm there.
3   Q. Okay. Just for the record so paragraph 317
4   starts your analysis that Chou that the Chou reference
5   anticipate Claim 10 of the 354 patent, correct?
6   A. Yes.
7   Q. Okay. And you have this ordering by claim
8   elements so if we could go to claim element ten C which
9   is paragraph 349?
10   A. Okay.
11   Q. Do you agree with me that claim element 10 her
12   recites the first plurality of bits on the first
13   plurality of carriers using the first SNR margin,
14   correct?
15   A. Yes.
16   Q. And paragraph 349 starts analysis of this
17   particular claim element in view of Chou, correct?
18   A. 349 says what it says.
19   Are you asking me to interpret what I'm
20   saying in 349.
21   Q. Well, I'm just getting you to agree this is
22   analysis starts for the case?
23   A. Okay. Fair enough. Yes.
24   Q. Okay.
25   A. Well my -- well my analysis started at the

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1   beginning with the previous, but are you asking me if
2   this is where my analysis starts for element Claim 10 C?
3   Q. Yes.
4   A. Okay.
5   Q. This is the first time the phrase the term SNR
6   margin appears.
7   A. For the Chou reference, yes.
8   Q. Yes. Correct.
9   So this where I would to go find your
10   application of SNR margin, the court's construction to
11   Chou, correct?
12   A. For just Chou, yes.
13   Q. Yes. Can you -- and this analysis starts at
14   paragraph 349 and continues all the way down to
15   paragraph paragraph 358 or 359?
16   A. Okay. That's claim.
17   Let me I agree those are the paragraphs
18   for just Chou and my analysis for claim 10. C.
19   Q. Can you point paragraph where you apply code
20   construction of SNR margin for any specific portion of
21   Chou in those paragraphs?
22   MR. ONG: Objection, form.
23   Q. THE ATTORNEY: I'll withdraw the question.
24   Point me to particular paragraph in that range where you
25   applied the court's construction of SNR margin to a

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1   specific portion of Chou?
2   A. If you will look at paragraph 118, I recognize
3   it is outside paragraph numbers you gave me, but I have
4   a global statement that I made in paragraph 118.
5   MR. CHIPLUNKAR: Objection,
6   nonresponsive.
7   A. It is a fact that I did apply the court's
8   construction to all my analysis including Chou and that
9   is stated in paragraph 118.
10   MR. CHIPLUNKAR: Objection,
11   nonresponsive.
12   Madame court reporter can you read back my
13   question to the witness.
14   (The reporter read back requested
15   material.)
16   A. I didn't need to repeat the same statement
17   that I have in paragraph 118 for each prior art
18   reference instead of repeating for each prior art
19   reference, I made a global statement in paragraph 118.
20   MR. CHIPLUNKAR: Objection,
21   nonresponsive I'll ask it a different way.
22   Q. THE ATTORNEY: In your analysis of Chou, was
23   this particular element where have you applied the
24   court's construction to a portion of Chou to render this
25   element obvious?

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1   MR. ONG: Objection, form.
2   A. I describe that again same answer in paragraph
3 118 that I've applied the court's construction to all my
4 analysis not just some of it.
5   Q. You mentioned you have been Judge Gilstrap
6 courtroom before.
7   Do you think this is going to fly?
8   A. I know it will.
9   Q. Sir what the second steps of the invalidity
10 analysis?
11   MR. ONG: Objection, form.
12   A. I think we've already asked and answered this
13 question.
14   Are you asking me a different question.
15   Q. No.
16   A. Or are you asking me the same question again.
17   Q. Will you agree with me that the second step of
18 invalidity analysis as to apply the court's construction
19 to the prior art you agree with that statement the prior
20 art?
21   MR. ONG: Objection, form.
22   A. I think paragraph 118 I explain my analysis
23 that I've done and I've used the court's construction
24 where terms aren't construed all the answer multiple
25 times that you've asked me is paragraph 118 and 118 is

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1 not specifically for any one piece prior art this is
2 global statement for all of my analysis.
3   Q. Do you want to the extent you have any
4 analysis of second step of analysis of invalidity strike
5 that.
6   To the extent there's any analysis of the
7 prior art in view of this claim element 10C all. That
8 is 118 there's nothing that can be found in paragraphs
9 that I mentioned correct?
10   MR. ONG: Object to the form.
11   MR. CHIPLUNKAR: I'll withdraw the
12 question.
13   MR. CHIPLUNKAR: Would you like to take
14 a break or should we keep going on Chou.
15   THE WITNESS: We can go another 15
16 minutes if you want to go half past.
17   MR. CHIPLUNKAR: Let's do that sure.
18   Q. THE ATTORNEY: So sticking with your analysis
19 of claim element 10C, where in Chou is a second strike
20 that.
21   So sir do you I'm going to send across
22 Exhibit 6?
23   A. I missed what you just said.
24   MR. CHIPLUNKAR: Sorry sir I'm going to
25 send across Exhibit 6.

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1   THE WITNESS: It is downloading I'll let
2 you know when I get it. Okay. I have it.
3   MR. CHIPLUNKAR: For the record Exhibit
4 6 is a document that had been produced beginning at
5 Bates No. CommScope 011721 and the title appears on page
6 3 of this document and band.
7   THE WITNESS: Optimize digital
8 transmission techniques for spec shaped channels with
9 impulse noise and for the the court reporter benefit I'm
10 going to put this title in the chat box and the author a
11 Chou Peter pit.
12   Q. THE ATTORNEY: Sir did I read that correctly?
13   A. Yes.
14   Q. Now, this is this is one of the reference that
15 you relied on for your analysis?
16   A. This is my reference that I relied on my
17 analysis for reference for Chou alone.
18   Q. Yes. Now, you agree with me that Chou teaches
19 bit swap algorithm?
20   A. Where you referring.
21   Are you asking me to remember in general.
22   Q. I thought you had the table don't separately
23 printed out if you want to get table contents?
24   A. Yes. In section 435 is the adapted bit slot
25 algorithm.

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1   Q. So you agree with me that Chou describes an
2 adaptive bit swapping algorithm?
3   A. Yes.
4   Q. Adaptive bit swapping moving bits from one
5 carrier to another carrier while maintain data rate,
6 correct?
7   A. Yes. It describes adaptive bit swap.
8 Procedure I wanted to take quick look to see if there's
9 anything out of ordinary but I don't see it.
10   Q. And if you go to PDF page 95 Chou?
11   A. Okay.
12   Q. That's where he describes or introduces
13 adaptive bit swapping algorithm?
14   A. Yes.
15   Q. First paragraph of 435 halfway, did you know
16 the paragraph -- let me see ten starting at line 10 the
17 first paragraph of 435 Mr. Chou you Dr. Chou goes to see
18 simple relatively slow adaptive bit swap procedure
19 correct that's bit swap procedure he's talking about,
20 correct?
21   A. I assume so, yes.
22   Q. And then the first step in the second
23 paragraph the first step in our adaptive bit swap
24 procedure as to keep track of the study estate MSE boss
25 subchannel in the several do you see sentence sir I read

29 (Pages 113 to 116)

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1   a portion of it?
2   A.   Yes.
3   Q.   And your understanding MSE stand for mean
4   square error you can searching through development?
5   A.   Yes we were referring to as bit error rate.
6   Q.   So in your mind EMS is the bit error rate?
7   A.   In general, I think that for this analysis and
8   stuff he's referring to the bit error rate for all
9   channels is monitored the background the bit error rate
10   one channel over certain threshold 3 db EMS, but,
11   essentially, it is looking at the at the signal to noise
12   ratio because he's referring to 3 db worse than other
13   subchannel.
14   Q.   Right. And so he says when the EMS one
15   subchannel is over certain threshold values, say over 3
16   db worse than another subchannel, a bit is swapped from
17   worse subchannel to the better subchannel so that to
18   overall would be reduced.
19   Do you see that?
20   A.   Yes.
21   Q.   This is essentially Chou's procedure, correct?
22   A.   This is a bit an adaptive bit swap algorithm
23   among many or algorithm that Chou is defining?
24   A.   Okay.
25   Q.   If you go to go back to claim if you go to

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1   Exhibit 3 which is your expert report?
2   A.   So you want Exhibit 3.
3   Q.   Yes.
4   A.   And what what paragraph did you want.
5   Q.   Paragraph 360?
6   A.   Okay. I'm there.
7   Q.   An paragraph 360 starts your analysis for let
8   me verdict prior irrelevant use second SNR margin.
9   Do you see that?
10   A.   Yes.
11   Q.   Okay. And this goes onto paragraph 368,
12   correct?
13   A.   Yes.
14   Q.   Between paragraphs 360 and 368 please point me
15   to the section where you applied the court's
16   construction of second SNR margin to particular portion
17   of Chou?
18   A.   It's the same answer that I gave you for the
19   previous element. It's the global statement in 118 that
20   I made so I did not have to repeat it ever prior art
21   reference ever element of ever prior art reference as
22   you're applying need to be done because I don't believe
23   it does because I did apply court's construction to ever
24   element of the claim for every prior art reference.
25   Q.   So you should not have a problem pointing me

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1   to that analysis for Chou in particular I need to
2   understand what your opinion with respect to Chou and
3   the inaudible?
4   A.   I follow court's construction and my opinion
5   as I've included for this element you want to ask me
6   something else for ten D for the SNR margin.
7   Q.   Where in Chou is a second SNR margin being
8   used strike that.
9   Let me give court exact construction?
10   A.   I have and started in paragraph 364 I say
11   figure 6. 20.
12   MR. CHIPLUNKAR: There's no pension
13   question I struck the question.
14   A.   Oh I didn't hear you strike it.
15   Q.   The court construed SNR margin as a parameter
16   used in determining the number of bits allocated to each
17   of the plurality carriers with a value parameter specify
18   extra SNR requirement assigned carrier per carrier in
19   addition SNR required maintain specify date rat
20   specified bit allocation.
21   Where in Chou is this second allocation
22   happening and what is the second parameter?
23   MR. ONG: Objection, form.
24   A.   I describe how Chou defines first SNR and then
25   continued the discussion for the second SNR margin so in

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1   order to understand how the logic worked for the second
2   SNR margin it's logical to look at the first SNR margin
3   because there's two different SNR margins required.
4   So on paragraph 349 I start my analysis
5   for the first SNR margin as it's disclosed by Chou and
6   then I provide the references or the cite to Chou of
7   definition explicitly how Chou explicitly discloses that
8   SNR margins are used to transport data.
9   And the idea is modifying the SNR margin
10   as construed by the court in order to transport adapt at
11   maximum achievable rate or margin.
12   MR. CHIPLUNKAR: Objection,
13   nonresponsive.
14   MR. CHIPLUNKAR: Let's take a break.
15   Let's go off the record. Ten minutes.
16   VIDEOGRAPHER: Time is 3:27.
17   (Off the record). Video back on the record time 3:49
18   p.m.,
19   Q.   Welcome back Mr. Lanning before you proceed
20   did you speak with anybody regarding the deposition
21   testimony?
22   A.   No nothing about my deposition.
23   Q.   Okay. If you could turn to Exhibit 1 which is
24   the patent and look at columns 1 and 2?
25   A.   Okay. I've got 1 and 2 open.

30 (Pages 117 to 120)

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1   Q. Yeah. So now, you agree with me that Chou
2 does not disclose SNR margin described in column 1 and 2
3 of the patent correct?
4   MR. ONG: Objection, form.
5   A. As we have gone over many times I believe Chou
6 discloses the claims as they have been as SNR margin had
7 been construed by the court and I've included my
8 analysis starting at element 10C for the first margin
9 and continued on W-2. C for the second margin.
10   Q. But sitting here today you haven't provided an
11 opinion that the product discloses type of SNR margin
12 described in column 1 and 2 of the patent correct?
13   MR. ONG: Objection, form.
14   A. I have included the analysis whether I
15 understand what those columns say that those columns
16 aren't clearly the same as court's construction so I
17 followed the court's construction for my analysis.
18   Q. For element 10C can you point me to someplace
19 in Chou where Chou uses a parameter to perform the
20 allocation?
21   MR. ONG: Objection, form.
22   THE WITNESS: I'm just reading through
23 and reference and I'm looking at the reference here to
24 answer your question.
25   A. Again as I explained the first part the first

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1 time I analyzed Chou disclosure of the court's combined
2 SNR margin term, I state in starting in paragraph 349 so
3 I give examples and then and then I think specifically
4 Chou and I get to 351 I provide another example that
5 starts at page 13 and Chou starting at page 59 discloses
6 SNR margins are used to transport data in different
7 margins are used maximize so that you Mack eyes total
8 data through put at fix margin at lower achieve margin
9 so the idea optimizing use of the channels and setting
10 the margins so that the overall communication link to
11 maximize its data so Chou is describing how he assigns a
12 SNR margin as it's defined by the court to each
13 subchannel to do that if you'd like me to go Chou and
14 look at those pages I'm happy to do that but the first
15 page that I would go to be at page 59 of Chou.
16   MR. CHIPLUNKAR: Objection,
17 nonresponsive.
18   Q. THE ATTORNEY: Can you point me to paramater
19 in Chou -- can you point me to parameter in Chou that is
20 used in determining the number of bits allocated to the
21 plurality of the where the value of the parameter
22 specifies that per carrier in addition to SNR required
23 to maintain specified bit error rate communication link
24 specify bit allocation.
25   So to paraphrase my question can you point

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1 me to this parameter in Chou that you rely on?
2   MR. ONG: Objection, form.
3   A. I'm working on it to answer your question I
4 can take from first is my report which is Exhibit 3
5 paragraph 351. I say Chou.
6   Q. Let me you are taking me to?
7   A. I'm at paragraph 351 in my report.
8   Q. I'm at 351 yes.
9   A. So this is where I'm describing again the
10 different SNR margins as defined by the court and I'm
11 saying Chou explicitly discloses that SNR margin are
12 used to transport data meaning in the case of total data
13 through put at fixed margin lower maximum achievable
14 margin and he is describe some of the worse subchannels
15 may not be used because SNR is not met?
16   And I'm pointing to page 59 of Chou at the
17 bottom of my paragraph 351.
18   Are you there. I'm getting to page 59 of
19 Chou.
20   A. Now Chou I go to page 59 of Chou.
21   Q. Okay.
22   A. Bottom of the paragraph after formula.
23   Q. Uh-huh?
24   A. Chou is describing in case of optimizeings
25 over total data rate and he's referring to our modified

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1 algorithm begin section from the previous section in
2 maximum DMT performance margin at fixed data rate so he
3 has a fixed data rate that they're dealing with to
4 transmit the data okay which would be case moderate to
5 high SNR region and then he continues to pay approve
6 follow along same lines begin in section 4. 2. 2 the
7 resulting band.
8   THE WITNESS: May be different from one
9 of the from the one for maximum total data through put
10 depending upon our fixed target data rate.
11   Now, this is where he explains that SNR
12 margin how it's applied. In general opt band with it
13 maximum total data through put will be equal or wired
14 than opt band.
15   THE WITNESS: For maximize margin so long
16 as the maximum achievable through put greater or equal
17 fixed target data rate when maximizing margin this is
18 because when we find the maximum target for particular
19 data rate the margin is applied unlateral across the all
20 used subchannels.
21   They say when they find that second margin
22 for this data through put it's applied across the all
23 the use subchannels on the other hand in case of
24 maximizing total data through put at fixed margin lower
25 and the maximum achievable.

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